

CLAIMS

1. A balance training device usable in a standing posture or a sitting posture, said device comprising:
- a plate (1) for carrying a user;
 - 5 a motor (2) for driving said plate;
 - a sensor (3) for measuring a rotation angle of said plate;
 - a torque measuring mechanism for measuring a torque applied to said plate;
 - 10 a kinetic model analyzer (5) for determining a target rotation angle for said plate from said measured torque;
 - and
 - a motor controller (6) for controlling said motor in accordance with a predetermined kinetic model.
- 15 2. A balance training device usable in a standing posture or a sitting posture in accordance with claim 1, in which said plate (1) rotates around an axis of rotation extending in parallel with a top surface of said plate.
3. A balance training device usable in a standing posture or a sitting posture in accordance with claim 2, in which said top surface of said plate (1) coincides with a plane containing a center of the axis of rotation.
- 20 4. A balance training device usable in a standing posture or a sitting posture in accordance with claim 2, in which said top surface of said plate (1) is spaced apart by a certain distance from said center of the axis of rotation.
- 25 5. A balance training device usable in a standing posture or a sitting posture in accordance with any one of

claim 1 to 4, in which said torque measuring mechanism has a pair of force plates (41) each comprising an integrated sensor unit composed of one sensor for measuring a load applied to said plate (1) and the other sensor for
5 measuring a position of a center of loading.

6. A balance training device usable in a standing posture or a sitting posture in accordance with any one of claim 1 to 4, in which said torque measuring mechanism comprises a sensor (42) for measuring a torque applied to
10 said plate (1), which is mounted on a shaft of said motor (2) for driving said plate (1).

7. A balance training device usable in a standing posture or a sitting posture in accordance with claim 5 or 6, in which said device has a kinetic model analyzer (5)
15 characterized in that a motion of said plate (1) is defined by a spring constant, a viscous braking coefficient and a moment of inertia, all of which are virtual.

8. A balance training device usable in a standing posture or a sitting posture in accordance with any one of
20 claim 1 to 7, in which said device has a motor controller (6) for controlling said plate (1) with a user carried thereon in accordance with an angle of equilibrium, or an angle making the force applied by the user in balance with the force provided by said motor, that has been
25 arithmetically determined by said kinetic model analyzer (5).

9. A balance training device usable in a standing posture or a sitting posture in accordance with any one of

claim 1 to 8, in which said balance training device can provide the training independently and exclusively directed to each one of three organs, including a semicircular canal, a vision and a deep sensibility, each governing a personal
5 capability of balancing.